Title: Super Duper Amusement Park

Brief Overview:

This lesson introduces the concept of line plots as a way to collect, organize, and analyze data. It is expected that students know how to find the mode, median, and range of a set of data. During this lesson the students will construct line plots and find the mode, median, and range from the data on the line plot. They will also be introduced to the vocabulary cluster, gap, and outlier. Students will have the opportunity to analyze data in order to make informed decisions.

NCTM Content Standard:

- Collect data using observations, surveys, and experiments.
- Represent data using tables and graphs such as line plots.
- Use measures of center, focusing on the median, and understand what each does and does not indicate about the data set.
- Propose and justify conclusions and predictions that are based on data and design studies to further investigate the conclusions or predictions.

Grade/Level:

Grades 4-5

Duration/Length:

Three 60 minute lessons

Student Outcomes:

Students will:

- Collect, organize, and display data by conducting surveys to answer questions.
- Describe a set of data by determining the median, mode, and range.
- Analyze data by interpreting line plots.

Materials and Resources:

Day 1

- Student resource Pre-Assessment "Summer in Baltimore"
- Teacher resource Pre-Assessment "Summer in Baltimore Answer Key"
- Student resource "Picture Cards" pre-cut in baggies (1 set for each group of 4 and 1 teacher set)
- Ball of string (1 for each group of 4)

- Scissors (1 for each group of 4)
- Measuring tape/ruler (1 for each group of 4)
- Sticky note pad (1 for each group of 4)
- Teacher resource "Basketball Bouncers" (1 set cut apart)
- Blank paper (1 for each group of 4)
- Garbage can (1 for each group of 4)
- Student resource "Free Throw"
- Student resource "Line Plot Practice" (reteaching only)
- Student resource "Ages of People Visiting Super Duper Amusement Park"
- Teacher resource "Ages of People Visiting Super Duper Amusement Park Answer Key"

Day 2

- Teacher resource "Recommended Numbers to put on the bottoms of the Rubber Duckies"
- Rubber Duckies (1 per student) – If rubber duckies are not available, use aluminum foil to create flat bottom bowls or bottle caps and place paper ducks inside.
- Sticky notes (1 per student)
- Student resource "Super Duper Amusement Park Rides"
- Teacher resource "Super Duper Amusement Park Rides"
- Student resource "Handfuls of Colored Cubes" (reteaching only)
- Teacher resource "Handfuls of Colored Cubes Answer Key"

Day 3

- Student resource "Graph Talk"
- Teacher resource "Graph Talk Answer Key"
- Student resource "Number of Friends You Take to the Park" (1 set pre-cut in a baggie)
- Student resource "Number of Hours You Spend at the Park" (1 set pre-cut in a baggie)
- Student resource "Number of Rides You Go On" (1 set pre-cut in a baggie)
- Student resource "Number of Souvenirs Bought" (1 set pre-cut in a baggie)
- Student resource "Wait Times for the Most Popular Ride" (1 set pre-cut in a baggie)
- Chart paper (1 piece per group)
- Teacher resource "Titles for Line Plots"
- 5 sentence strips with titles from teacher resource "Titles for Line Plots" written on them
- Student resource "Snackers Company" letter
- Brown paper bag with pre-cut student resource "Ice cream Scoop Cards"
- Student resource "Ice Cream Line Plot"
- Student resource "Ice Cream Data Squares"

- Student resource “The Talking Graph”
- Student resource “Getting Stuff-ed” line plot
- Student resource “Reteach Question Cards”
- Teacher resource “Reteach Question Cards Answer Key
- Student resource “It’s All in a Name”
- Teacher resource “It’s All in a Name Answer Key

Development/Procedures:

Day 1

Pre-assessment

- Distribute a pre-assessment paper, student resource “Summer in Baltimore” to each student. The paper will provide a set of data and students will be asked to choose the correct letter of the line plot that matches the data. Complete the paper and keep it to revisit later (correct answer is letter B.).

Engagement

- Set the stage by explaining that you are going on a day trip and the bag contains the items you will need. Display a prop like a bag to simulate this situation.
- Give each group of 4 students a baggie with the pre-cut picture cards from student resource “Picture Cards.”
- Students will classify the pictures into a variety of different categories.
- Conduct a class discussion as to how each group categorized the data. Have a set of pre-cut pictures on the board for the students to manipulate their items into categories.
- Elicit student responses as to where they think they may be going.

Exploration

- Distribute a ball of string and a sticky note pad to each group of four students.
- The students will need to find their height by using the string as a form of non-standard measurement.
- The students will then need to use a tape measure/ruler to find their heights to the nearest inch.
- As the students are working, circulate the room and take a mental note of the highest and lowest heights.

Explanation

- Begin by saying that the lowest number you saw was _____ inches. Ask if any students had a number lower than that number. Explain that this number will be

the first number on the line plot. Begin to construct the line plot, using that number as the first number.

- State that the highest number you saw was _____ inches. Ask if any student had a number higher than that number. Explain that this number will be the last number on the line plot. Model counting up by one from the lowest number to the highest number.
- Ask the students: "What do the numbers at the bottom represent?" Write the label *Height in Inches (in.)* below the numbers.
- Ask the students, "What does every graph need to have?" (a title) Write the title at the top of the graph, *Height in Inches of Students in _____'s class*.
- Call the students to the board, one group at a time, to place sticky notes above the numbers that correspond to their height in inches.
- Ask: "How many students were measured?" As student answers are given, explain that each "X" represents one person. Since there are _____ number of students in the class, their must also be _____ number of X's on the line plot. Count the X's as a whole class.
- Say: "Describe how you would find the mode of a set of data." Elicit student responses for the definition of the mode. Ask: "What would the mode be in this set of data?" The students will show and explain their responses. As responses are given explain that the mode is the number with the most X's above it.
- Say: "Describe how you would find the median in a set of data." Elicit student responses for the definition of the median. Call two students to the board to model how to find the median. Give each student a paper basketball using teacher resource "Basketball Bouncers." Explain that the students will begin "bouncing" their balls at opposite ends of the line plot until they meet in the middle (median).
- Say: "Describe how you would find the range in a set of data." Elicit student responses for the definition of the range.
- Explain how to find the range of a set of data by using the line plot (greatest number with an X above it minus the lowest number with an X above it).
- Review the concepts learned in the lesson so far (constructing a line plot, parts of a line plot, define and state the mode, range, and median of the data set).

Application

- Divide the class into groups of four. Distribute student resource "Free Throw" to each student. Give each group a crumpled piece of paper to use as a ball. Each student will take ten free throws from an assigned distance from a trash can. Each group member will need to record the number of free throws made out of ten shots. Create a line plot on the board with the numbers 0 -10.
- As the groups complete the task, each student will need to write his/her name on a sticky note and place her sticky note above the number of free throw shots that she/he made. Explain to the early finishers that they can continue to practice their free throws.
- Students should work either in pairs on independently to use student resource "Free Throw" to create a line plot. Students should be able to tell the number of students that participated in the free throw shooting and identify the mode, median, and range.

Differentiation

Reteach
Students who are having difficulties can meet with you at a table in the back of the room. Distribute student resource, "Line Plot Practice" to each student. If a student is really struggling with creating the line plot, write the parts (title, label, data, scale) on a sticky note and place them on the student's paper. Each student should draw three cards from a set of cards that contain only the digits 0-9. Each student should take a turn reading the numbers aloud. As the numbers are read, each student should put an X over the number that is called. Once the data is plotted, guide the students to find the mode (most), median (middle), and range (highest value-lowest value).

Enrich
Give the students two options from which to use. First, they can choose to write two additional questions that could be answered using the data in the line plot. The other option would be to think of another way to organize the data and record it on a blank sheet of paper.

Assessment
Students will construct a line plot for a given set of data on student resource "Ages of People Visiting Super Duper Amusement Park." They will be asked to write a journal explaining how they constructed their line plots. See answer key to assess students' understanding.

Day 2

Exploration

- The students will play another amusement park game, *Lucky Ducky.* Each student will have a chance to choose a rubber ducky out of a large tub of water. Each ducky will have a number written on the bottom. As students lift up the ducky, they will put sticky notes above the number they chose. The class line plot will be constructed in this way.

Explanation

- Just like the previous day, guide the students as they place a title at the top and a label below the number line. The students will also be asked to find the mode, median, and range of the data.
- Begin to introduce new vocabulary. Ask: "What do you think of when you hear the word, cluster?" (They may think of oat clusters, grapes or the cluster of desks in the classroom.) Guide the students as they locate a cluster on the line plot. Explain that this is where the majority of the data is located. There may be more than one cluster on the line plot.

- Ask what the students think of when they hear the word "gap." If no one has an answer, explain that it is a space between data points. Have a student locate a gap in the data.
- Lastly are outliers. Lead students to understand that an outlier is far away from the rest of the data points. Identify any outliers on the line plot.
- Pose the question, "What if _____ and _____ each got to choose another ducky and got the numbers _____ and _____? How would this data change our line plot?" Have a student come up to the board and place a sticky note above each of the new numbers. Allow students to work in pairs to find the new mode, median, and range. Ask: "If I were to choose one more ducky, what number do you think would be on the bottom? Why?"

Application

- Students will be given student resource "Super Duper Amusement Park Rides" that has a list of rides at the amusement park and the heights that are needed to ride. Students will look at the height data of the students in the grade in order to construct a line plot.
- After completing the line plot, students will find the median, mode, and range of the data. They will also locate and clusters, gaps, and outliers.
- Students will answer a set of questions that ask them to interpret the data.
- Circulate around the room while the students are working. The students can also discuss questions with their neighbors if they need some help. See answer key to assess students' understanding.

Differentiation

Reteach

Students who are having difficulties can meet with you in a small group. Give each student a completed number line that shows the data for the number of connecting cubes a student can grab in one handful. Discuss information the students can determine from looking at the graph. Then, guide them through the questions on student resource "Handful of Colored Cubes." See answer key to assess students' answers.

Enrich

First, students can choose to write two additional questions that could be answered using the data in the line plot. These should be questions that have the students manipulating/changing the data in some way. Second, they can create their own survey question and circulate around the room to collect data. They can create a line plot and write questions that can be answered from their graphs. Then, they can trade papers with a partner and answer each other's questions.

Day 3

Engagement

- Distribute student resource "Graph Talk" which has two line plots without titles. Ask the students to write possible topics the top graph could be using a dry-erase

board or notebook paper. Elicit student responses. Explain to the students they will survey people at the Super Duper Amusement Park to find the daytime snack they enjoy the most.

Exploration

- Distribute a baggie with a different set of pre-cut data cards from the five student resource sheets "Data Cards" to each table group. Using the data construct a line plot on chart paper. As students complete their line plots, they should begin to discuss possible titles for the graph.

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Explanation

- Each group will display their line plots on the board. The line plots will have no titles. Have the titles from teacher resource "Titles for Line Plots" written on sentence strips for the students to match with the line plots. As the students match the titles to the data they will discuss how they made their decisions.

Application

- Read aloud the letter on student resource "Snackers Company" given to the students explaining that they will act as Snack Consultants for the amusement park. The company, Snackers, provides all of the snacks sold at the concession stands and would like to know how much ice cream to order so that none of it will go to waste. The small groups of four students will be given brown paper bags with 54 ice cream scoop cards inside. The students will take turns picking cards out of the bag until they have removed twenty cards (Each student should get to take 5 cards out of the bag). The students will need to record how many scoops of ice cream were bought on Saturday at the park on student resource "Ice Cream Line Plot." The students will use their data to complete a line plot showing how many scoops of ice cream people preferred. As a group the students will need to complete a question matrix on student resource "Ice Cream Data" that will support their data. See the answer key to assess students' work.
  Call the students together as a whole class. The class will discuss the results of their survey. Ask: "What were the greatest and least number of scoops that were eaten by a single person?
  Can we say that most people in the sample share one opinion about the number of scoops they would buy at the amusement park? Why or why not?
  How could we use this information to help the Snackers Company determine how much ice cream to purchase?"
  Facilitate writing a letter to the Snackers Company with the students. Distribute student resource "The Talking Graph." Remind the students that they will need to answer the following questions:
- What is the purpose of the graph?
- What information does the graph show?
- What conclusions can be drawn based on the data displayed in the graph?

Make sure there is a list of the lesson's math vocabulary with definitions posted in the classroom.

Differentiation

Reteach

The students will be given student resource "Getting Stuff-ed" which has a line plot on the number of stuffed animals won at the park by a single person. The students will need to use the line plot to answer four out of the six multiple choice questions on student resource "Reteach Cards."

Enrich

The students will work in partners to investigate how much money it would typically cost to purchase a souvenir hat with their first names on them. Distribute student resource "It's All in a Name." The students will need to add their data to the pre-made line plot on the paper. After adding their data to the line plot, students will compute how much it would cost them to purchase their own hats and compare that to how much it would cost others to purchase a hat.

Summative Assessment:

Distribute the assessment "Picking up Popcorn" for students to complete independently.

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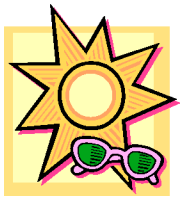
Summer in Baltimore



James lives in Baltimore. Summer temperatures, in degrees Fahrenheit, are listed below.

91 96 99 97 95 96 99 98

Which line plot displays this data?

A.

Baltimore Temperatures

				X	X			X
X				X	X	X	X	X
91	92	93	94	95	96	97	98	99

B.

Baltimore Temperatures

					X			X
X				X	X	X	X	X
91	92	93	94	95	96	97	98	99

C.

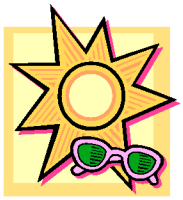
Baltimore Temperatures

				X			X
X			X	X	X	X	X
91	93	94	95	96	97	98	99

Summer in Baltimore

ANSWER KEY

James lives in Baltimore. Summer temperatures, in degrees Fahrenheit, are listed below.



91 96 99 97 95 96 99 98

Which line plot displays this data?

A.

Baltimore Temperatures

				X	X			X
X				X	X	X	X	X
91	92	93	94	95	96	97	98	99

B.

Baltimore Temperatures

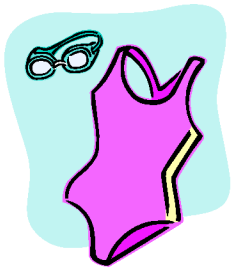
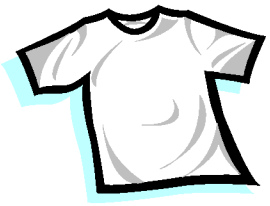
					X			X
X				X	X	X	X	X
91	92	93	94	95	96	97	98	99

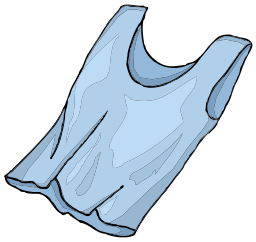
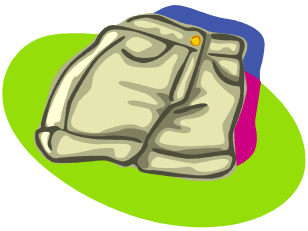
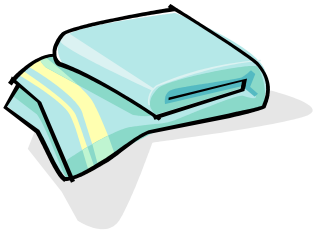
C.

Baltimore Temperatures

				X			X
X			X	X	X	X	X
91	93	94	95	96	97	98	99

Picture Cards

bathing suit 	bathing suit 	money 
sunscreen 	flip flops 	t-shirt 

tank top 	shorts 	backpack 
towel 	sneakers 	

Basketball Bouncers

Free Throw

Free Throw Shots Made By Students in _____'s Class

0 1 2 3 4 5 6 7 8 9 10

Number of Free Throw Shots Made

How many students were surveyed? How do you know?

_____

Mode = _____

Median = _____

Range = _____

Line Plot Practice

Title:

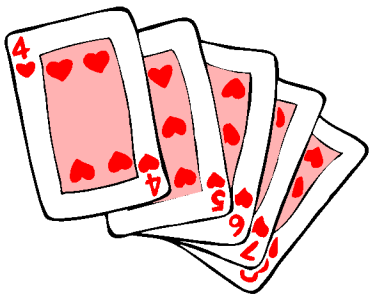
0 1 2 3 4 5 6 7 8 9

How many cards were drawn? How do you know?

Mode = _____

Median = _____

Range = _____



Ages of People Visiting Super Duper Amusement Park

The Super Duper Amusement Park is considering opening a new attraction. In order to make an informed decision, the park wants to know the ages of the people who are visiting the park on a regular basis. Below is the data they collected from season pass holders.

15	17	17	20	15	16	23	21	21	20
18	18	22	16	15	17	17	22	20	16

Use the data to construct a line plot. Be sure to include a scale, data, title, and axis label.

On the lines below, explain the steps you followed in order to properly construct your line plot.

Ages of People Visiting Super Duper Amusement Park
Answer Key

The Super Duper Amusement Park is considering opening a new attraction. In order to make an informed decision, the park wants to know the ages of the people who are visiting the park on a regular basis. Below is the data they collected from season pass holders.

15	17	17	20	15	16	23	21	21	20
18	18	22	16	15	17	17	22	20	16

Use the data to construct a line plot. Be sure to include a scale, data, title, and axis label.

Ages of People Visiting Super Duper Amusement Park

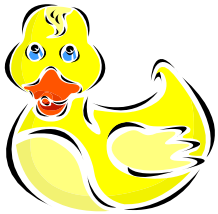
		X						
X	X	X			X			
X	X	X	X		X	X	X	
X	**X**	**X**	**X**		**X**	X	**X**	**X**
15	16	17	18	19	20	21	22	23

Ages in Years

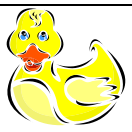
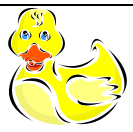
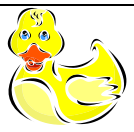
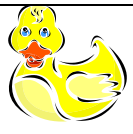
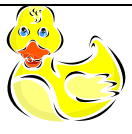
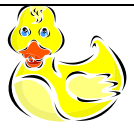
On the lines below, explain the steps you followed in order to properly construct your line plot.

First, I looked at the data and found the greatest and least numbers. Then, I wrote the lowest number below the grid and skip-counted by one until I reached the highest number. Each time a number appeared in the data set, I put an X above that number in the line plot since each X represents one person. I remembered to label what the numbers represented (ages in years) below the line plot. All graphs need a title, so I titled it Ages of People Visiting Super Duper Amusement Park.

Recommended Numbers to put on the bottoms of the Rubber Duckies

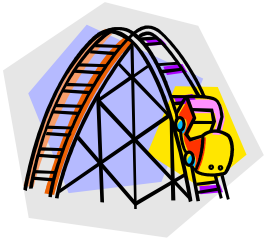


65	65	66	66	66
66	67	67	67	67
68	68	68	68	68
68	69	69	69	69
69	69	69	74	74

Super Duper Amusement Park Rides

There are so many rides to choose from at the amusement park. Look at the list below to see if you meet the height requirements for all of the rides.



Ride	Height Requirement
Radical Roller Coaster	58”
Mountain Run Coaster	54”
Tower of Fear	48”
Wacky Waterfall	45”
Crazy Bumper Cars	42”
Flying Swings	36”

Below are the heights in inches of other students in your grade. Use the data to create a line plot. Be sure to include a scale, data, title, and axis label.

52	52	49	47	59	52	48	50	50	51
54	52	54	52	52	53	51	50	51	53

How many students were surveyed? _____

Mode _____

Median _____

Range _____

Are there any clusters, gaps, or outliers? If so, where are they located?

_____

_____

Which rides can most of the students ride?

_____

_____

What do you think would be the most popular ride? Why?

_____

_____

_____

Would this be a good place to take a field trip? Why or why not?

_____

_____

_____

What if the two tallest students were absent on the day of the trip? What would this do to the data?

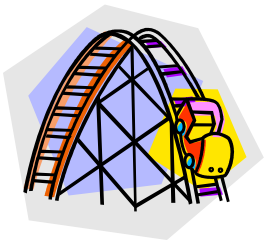
_____

_____

_____

Super Duper Amusement Park Rides
Answer Key

There are so many rides to choose from at the amusement park. Look at the list below to see if you meet the height requirements for all of the rides.



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52	52	49	47	59	52	48	50	50	51
54	52	54	52	52	53	51	50	51	53

Heights of Students in Fourth Grade

					X							
					X							
					X							
			X	X	X							
			X	X	X	X	X					
X	X	X	X	X	X	X	X					X
47	48	49	50	51	52	53	54	55	56	57	58	59

Height in Inches

How many students were surveyed? 20

Mode 52

Median 52

Range 12

Are there any clusters, gaps, or outliers? If so, where are they located?

There is a cluster of data from 50-54. This is the height of most of the students. There is a gap from 54-59. This means that no one is 55, 56, 57, or 58 inches tall. There is an outlier at 59 inches. Only one student is very tall, much taller than the rest of the class.

Which rides can most of the students ride?

Most of the students can ride the Flying Swings, Crazy Bumper Cars, Wacky Waterfall, and Tower of Fear. This is because the tallest height for those four rides is 48" and everyone in the class is at least 48" except for one student. That one student could not ride the Tower of Fear. Three students could ride the Mountain Run Coaster because they are 54" or taller. Only one tall student could ride the Radical Roller Coaster.

What do you think would be the most popular ride? Why?

I think that the boys would really like the Tower of Fear because most of the students are tall enough to ride it and because boys like to act brave. I think that the girls would like to ride the flying swings because the shortest person is probably a girl and the girls would not want to leave anyone out from the group.

Would this be a good place to take a field trip? Why or why not?

This would be a great place to have a field trip. First, all of the students can ride at least half of the rides. 19 out of 20 students can ride 4 out of 6 rides. Even though only 1 student can ride all of the rides, all of the students could enjoy many of the rides. Also, there are probably other rides and shows that the students can partake in during the trip to the amusement park.

What if the two tallest students were absent on the day of the trip? What would this do to the data?

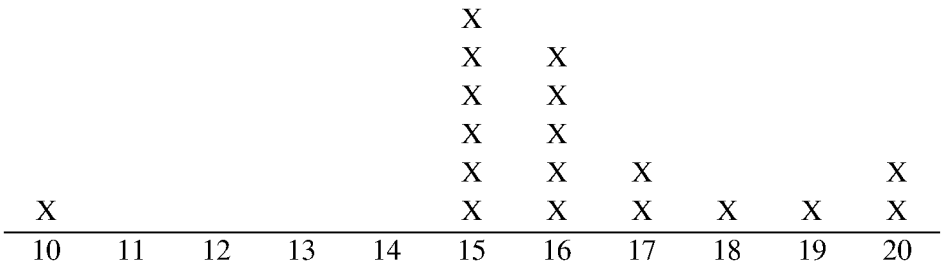
If the tallest 2 students were absent on the day of the trip, there would be no X's over 59 and only 1 X over 54. Therefore, there would be no outlier for the data set. Also, no one would be able to ride the Radical Roller Coaster, and only one person would be able to ride the

Mountain Run Coaster. The mode would still be 52. The range would now be 7 because the new tallest height is only 54". The new median would be 51.5".

Handfuls of Colored Cubes

Your teacher had a contest to see who could take the largest handful of colored cubes. Below are the results for your class.

Handfuls of Colored Cubes



Number of Cubes Grabbed in One Handful

How many students were surveyed? _____

Mode _____

Median _____

Range _____

Are there any clusters, gaps, or outliers? If so, where are they located?

_____

_____

How many cubes can most students grab in one handful?

_____

_____

If another student was randomly chosen to grab a handful of cubes, how many do you think they will get in one handful? Why?

_____

_____

Why do you think someone was only able to grab 10 cubes in one handful?

_____

_____

What if the two more people take a handful of cubes? What would this do to the data if one of them gets 21 cubes and the other gets 16 cubes?

_____

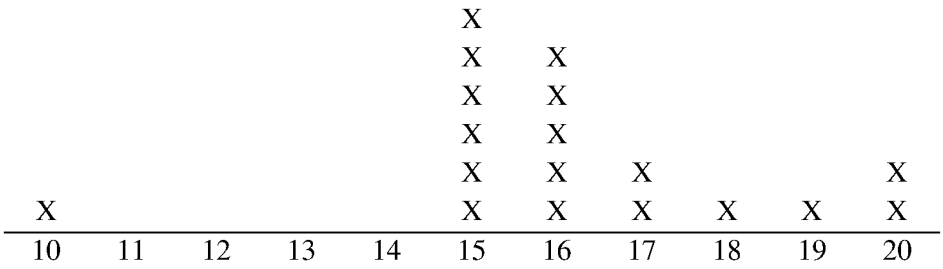
_____

_____

Handfuls of Colored Cubes
Answer Key

Your teacher had a contest to see who could take the largest handful of colored cubes. Below are the results for your class.

Handfuls of Colored Cubes



Number of Cubes Grabbed in One Handful

How many students were surveyed? 18

Mode 15

Median 16

Range 10

Are there any clusters, gaps, or outliers? If so, where are they located?

There is a cluster at 15-16 because that is where over half of the data is located. There is a gap from 10-15 which means that no one grabbed 11, 12, 13, or 14 cubes in one handful. 10 is an outlier because only one person grabbed 10 cubes and 10 is much less than the other values.

How many cubes can most students grab in one handful?

Most students can grab 15 cubes in one handful. That's why it is the mode. It appears the most.

If another student was randomly chosen to grab a handful of cubes, how many do you think they will get in one handful? Why?

I think they would chose 15 cubes because it is the mode. However, they could grab 16 cubes because only one less person grabbed 16 cubes instead of 15.

Why do you think someone was only able to grab 10 cubes in one handful?

I think that person might have small hands. Also, maybe they weren't trying to get the most number of cubes possible. They might not have been competitive and could have just taken a few in their hand. One other possibility could be that they could have a cut on their hand, and therefore it could hurt their hand if the cubes rub against it.

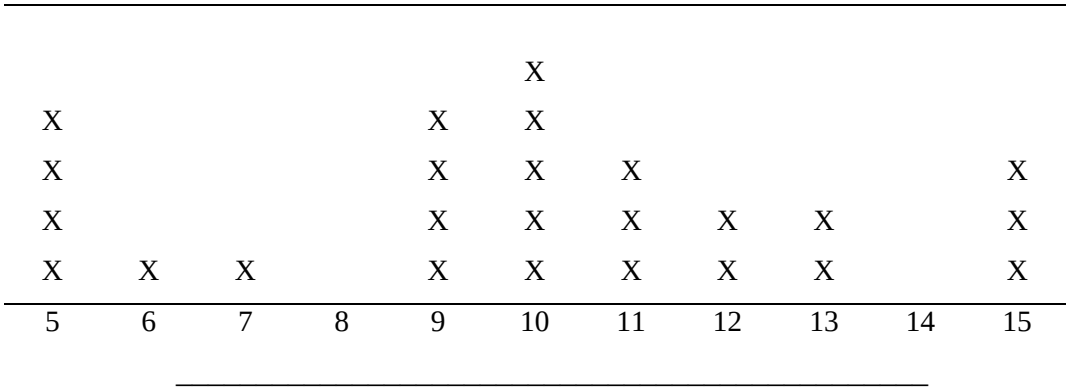
What if the two more people take a handful of cubes? What would this do to the data if one of them gets 21 cubes and the other gets 16 cubes? (Add this data to the line plot before answering.)

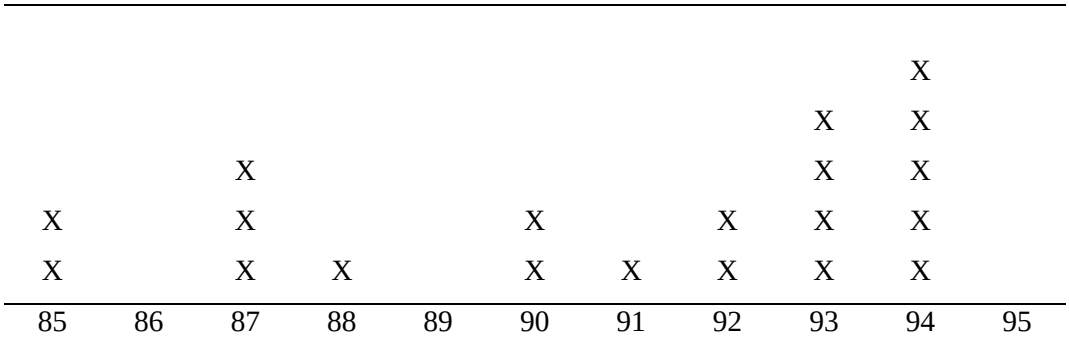
The mode would now be both 15 and 16 because they both have 6 X's above them. The median would still be 16. The range would now be 11 since 21 is greater than 20. The cluster, gap, and outlier would remain the same.

Graph Talk

Each graph displays a different set of data. Given three titles, select which title belongs to each graph. One title will **not** be used. You will also need to include the axis label based on the title selected.

- The Weekly Amount of Allowance for Fourth Grade Students
- The Number of Pets Fourth Graders Own



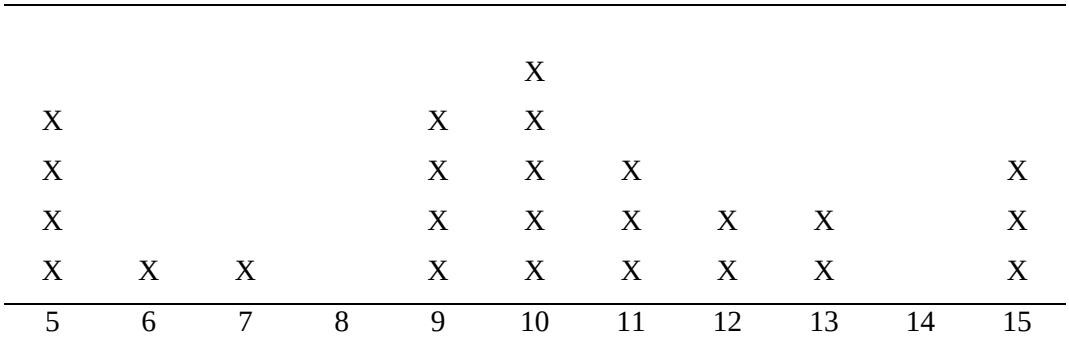


Graph Talk

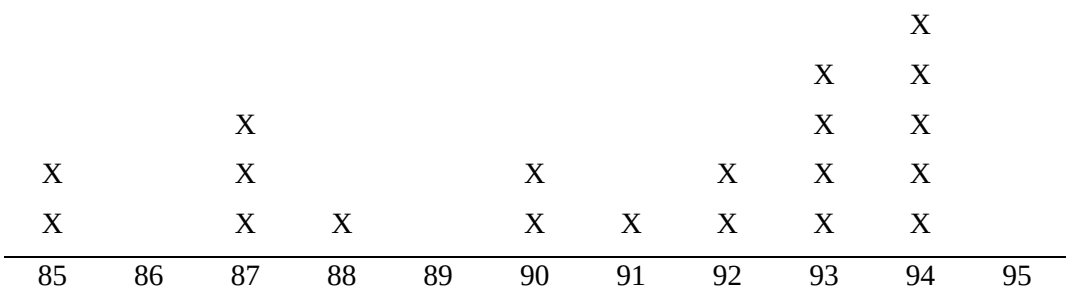
Answer Key

Each graph displays a different set of data. Given three titles, select which title belongs to each graph. One title will **not** be used. You will also need to include the axis label based on the title selected.

- The Weekly Amount of Allowance for Fourth Grade Students
- The Number of Pets Fourth Graders Own
- The Math Test Scores for Fourth Grade Students



The Weekly Amount of Allowance for Fourth Grade Students



The Math Test Scores for Fourth Grade Students

Number of Friends You Take to the Park
Data Cards

1	2	1	2
1	4	3	3
3	1	3	1
3	3	1	3
3	3		

Number of Hours You Spend at the Park

Data Cards

5	6	5	7
8	8	9	10
7	8	5	9
10	8	9	9
8	7		

Number of Rides You Go On
Data Cards

10	12	15	15
17	16	17	17
19	16	13	15
18	18	16	14
16	18	19	18

Number of Souvenirs Bought
Data Cards

0	1	0	0
1	1	2	1
2	1	0	1
1	1	1	0
1	1	0	3

Wait Times for the Most Popular Ride
Data Cards

35	41	45	42
42	37	39	39
40	35	42	45
42	37	38	44

Titles for Line Plots

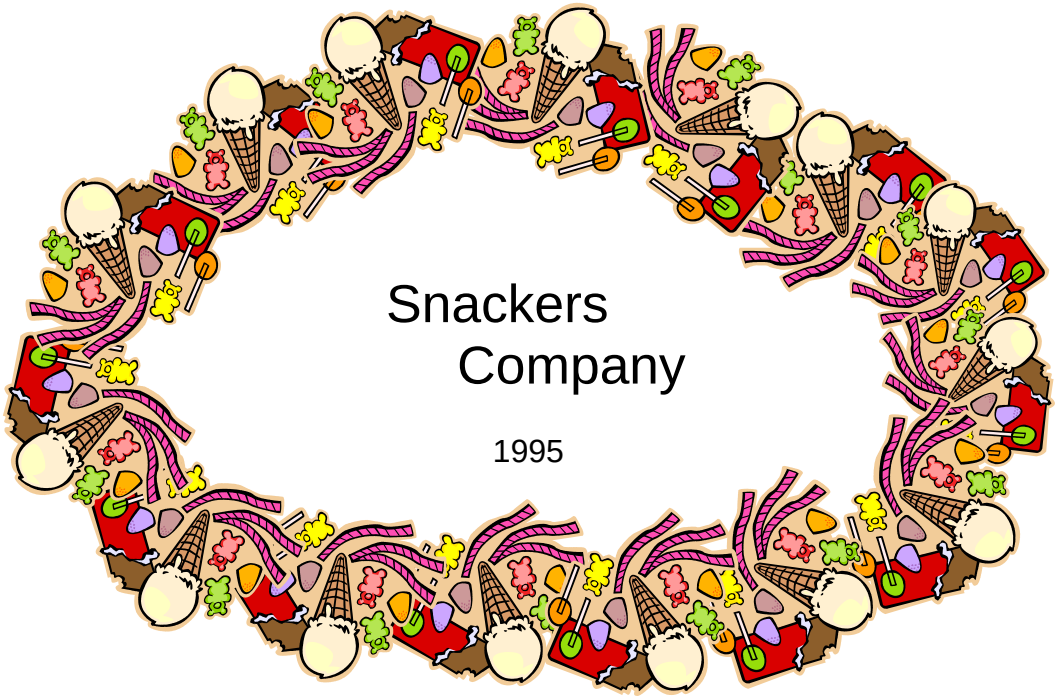
Wait Times for the Most Popular Ride

Number of Friends You Take with You

Number of Hours You Spend at the Park

Number of Rides You Go On

Number of Souvenirs Bought



Dear 4th grade students of _____Elementary School,

Congratulations! The Snackers Company would like to offer you a position as one our consultants to survey people on what snack foods they like to eat. We have _____ positions open for the Super Duper Amusement Park.

You will need to survey twenty people to find the number of scoops of ice cream that they prefer to eat. At the present time our ice cream is packaged to serve only six scoops. We will greatly appreciate your recommendations about the type of snacks we should ship to the Super Duper Amusement Park. Thank you for your help!

Sincerely,

Mrs. Whoopie Pie-eater
Founder and CEO of Snackers Company

Ice Cream Scoop Cards

 1 scoop	 2 scoops
 3 scoops	 4 scoops
 5 scoops	 6 scoops

Ice Cream Line Plot

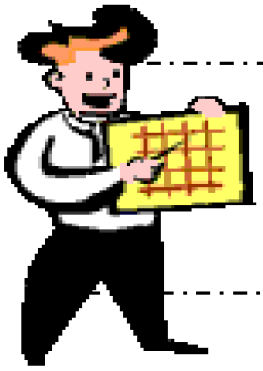
Number of Scoops of Ice Cream People Enjoy at Super Duper Amusement Park on Saturday

1 2 3 4 5 6

Number of Scoops of Ice Cream

Ice Cream Data

What is the greatest number of scoops any person chose?	Using the line plot, write the numbers in the data set.	What is the range, mode, and median of this data?
If you surveyed one more person and he chose 2 scoops, what would change in your data? (the range, mode, or median)	What is the number of scoops that people chose the least?	What other possible titles could this graph have?



Talking Graph

Name _____ Date _____

If your graph could talk, what would it say? You will need to write a paragraph that tells about your graph. Be sure to answer these questions in your paragraph:

- What is the purpose of the graph?
- What information does your graph show?
- What conclusions can you draw based on the data displayed in the graph?

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

The Number of Stuffed Animals Won at the Super Duper Amusement Park

	X			
	X			
X	X			
X	X		X	X
X	X		X	X
X	X		X	X
X	X		X	X
1	2	3	4	5

The Number of Stuffed Animals

Reteach Question Cards

1. What is the greatest number of stuffed animals won at the park by a single person? A) five (5) B) two (2)	2. The number four (4) represents _____? A) the range B) the median
3. How many people won two or more stuffed animals? A) 20 people B) 15 people	4. How many stuffed animals in all? A) ten (10) B) twenty (20)
5. If another person won four stuffed animals, how would the mode change? A) the mode will not change B) the mode will change to four	6. What is the median number of stuffed animals? A) the median number is two (2) B) the median number is three (3)

Reteach Question Cards
Answer Key

1. What is the <u>greatest</u> number of stuffed animals won at the park by a single person? **A) five (5)** B) two (2)	2. The number four (4) represents _____? **A) the range** B) the median
3. How many people won two or more stuffed animals? A) 20 people **B) 15 people**	4. How many stuffed animals in all? A) ten (10) **B) twenty (20)**
5. If another person won four stuffed animals, how would the mode change? **A) the mode will not change** B) the mode will change to four	6. What is the <u>median</u> number of stuffed animals? **A) the median number is two (2)** B) the median number is three (3)

It's All In A Name

You would like to buy a souvenir hat from the Super Duper Amusement Park with your name ironed on it. The store does not charge for the first three (3) letters of a name but charges 25-cents for each additional letter.

Will you be able to have your first name ironed on for ***free***?

How much will the typical person at the amusement park have to pay to have his or her name ironed on the hat?

You will need to add your data to the line plot and answer the questions on the back of this worksheet.

Number of Letters in Customers' Names

					X					
				X	X					
		X		X	X					
		X	X	X	X	X				
	X	X	X	X	X	X	X		X	X
1	2	3	4	5	6	7	8	9	10	11

Number of Letters

It's All In A Name

Use the line plot to answer the questions below.

1. How many letters are in your name? ____ How much money will you need to pay to iron your name on a hat? _____

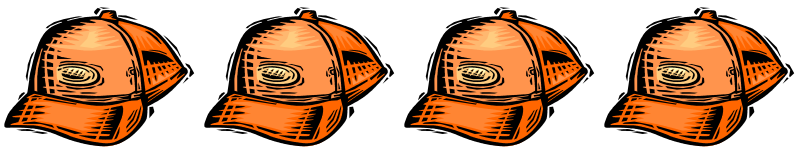
2. What is the mode of this data? What does this tell us?
   _____
   _____

3. Are there any gaps in the data? Why do you think so?
   _____
   _____
   _____

4. How much money would the typical person have to pay to have his or her name ironed on a hat?
   _____
   _____

5. If a person **does not** want to spend more than a dollar for his hat, what is the greatest number of letters he could have in his name? Explain how?
   _____
   _____
   _____

6. Would the median or the mode be most helpful to the store selling the hats? Explain why?
   _____
   _____
   _____



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Number of Letters in Customers' Names

					X					
				X	X					
		X		X	X					
		X	X	X	X	X				
	X	X	X	X	X	X	X		X	X
1	2	3	4	5	6	7	8	9	10	11

Number of Letters

It's All In A Name

Student Answers will vary.

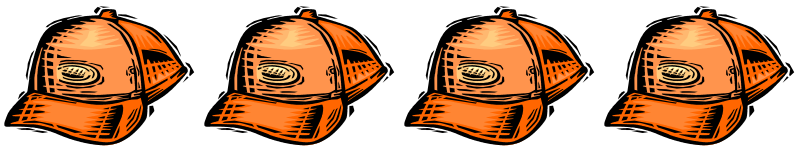
Use the line plot to answer the questions below.

1. How many letters are in your name? ___ How much money will you need to pay to iron your name on a hat? _____

2. What is the mode of this data? What does this tell us?
   The mode of the data would be 6 letters in a name. This number tells us that it is more common to have 6 letters in a name. This number tells us the most frequent purchase of additional letters.
3. Are there any gaps in the data? Why do you think so?
   _____
   _____
   _____

4. How much money would the typical person have to pay to have his or her name ironed on a hat?
   The typical person would have to pay $0.75 to have his or her name ironed on a hat.
5. If a person **does not** want to spend more than a dollar for his hat, what is the greatest number of letters he could have in his name? Explain how?
   The greatest number of letters he could have in his name would be 7. The first 3 letters in the name are free. In a 7 letter name there would only be 4 letters leftover. 4 times 25-cents equals $1.00.

6. Would the median or the mode be most helpful to the store selling the hats? Explain why?
   _____
   _____
   _____

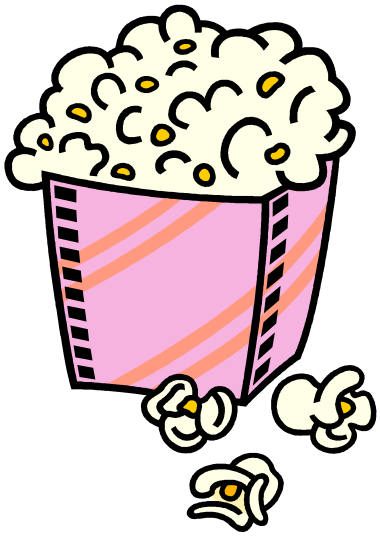


Picking Up Popcorn

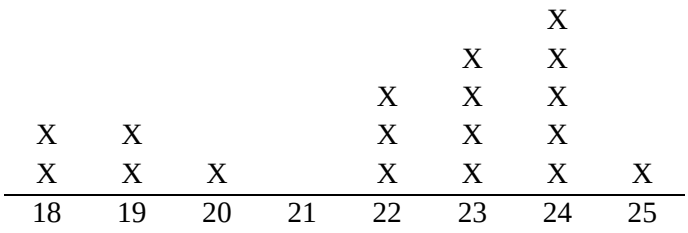
You and your friends shared an extra large popcorn at the Super Duper Amusement Park. Each person took one handful to eat. Below are the number of pieces each person got in their handful.

Some data is missing from the line plot. Check the data chart and add the missing information to the line plot.

24	18	19	21	23	24	18	22	23	25
23	19	22	22	23	24	20	23	24	24



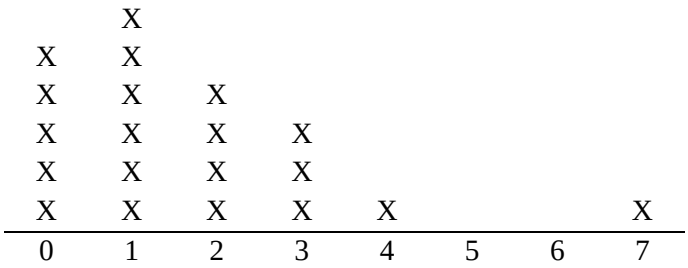
Picking Up Popcorn



Number of Popcorn Pieces

1. How many people shared the popcorn? _____
2. How many pieces did most people get in one handful? _____
3. Are there any clusters? If so, where? _____
4. Jasmine says the range is 5. Is she correct? Explain.
   _____
   _____
5. What is the total number of pieces in an extra large popcorn if there is no popcorn leftover? _____

Number of Ice Cream Toppings



Number of Toppings

Part A

What is the median?

_____

Part B

- Use what you know about finding the median to explain why your answer is correct.
- Two more people are surveyed. The both like to have four toppings on their ice cream. How does this affect the median?

_____

_____

_____

_____

_____

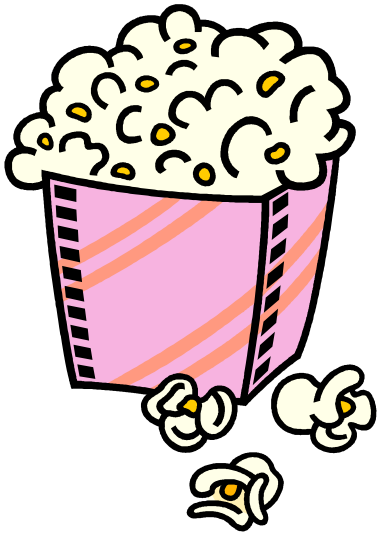
Picking Up Popcorn

Answer Key

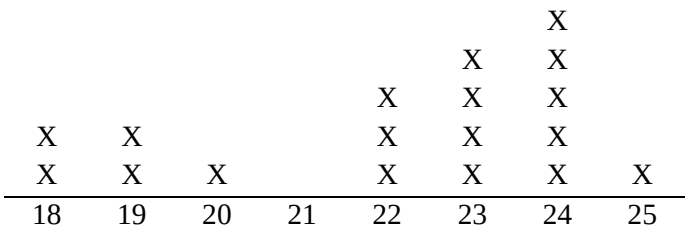
You and your friends shared an extra large popcorn at the Super Duper Amusement Park. Each person took one handful to eat. Below are the number of pieces each person got in their handful.

Some data is missing from the line plot. Check the data chart and add the missing information to the line plot.

24	18	19	21	23	24	18	22	23	25
23	19	22	22	23	24	20	23	24	24



Picking Up Popcorn



Number of Popcorn Pieces

6. How many people shared the popcorn? 20 people

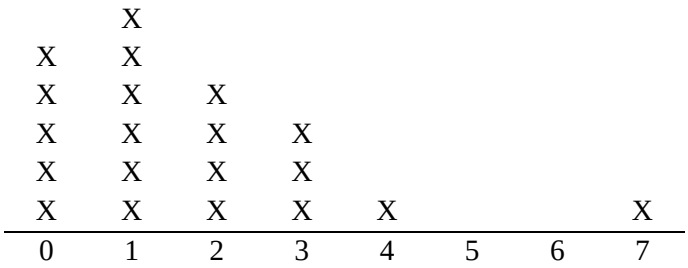
7. How many pieces did most people get in one handful? 24

8. Are there any clusters? If so, where? 22-24

9. Jasmine says the range is 5. Is she correct? Explain.
   No, she is not correct. The range would be 25 -18= 7.

10. What is the total number of pieces in an extra large popcorn if there is no popcorn leftover? 441 pieces of popcorn

Number of Ice Cream Toppings



Number of Toppings

Part A

What is the median?

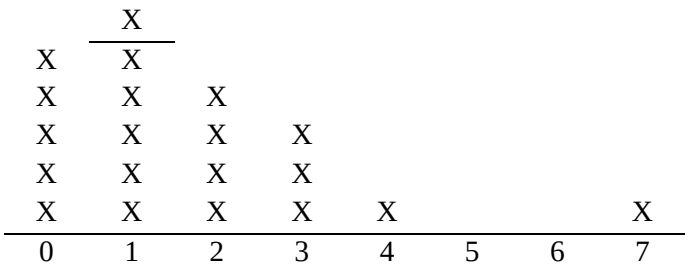
1

Part B

- *Use what you know about finding the median to explain why your answer is correct.*
- *Two more people are surveyed. The both like to have four toppings on their ice cream. How does this affect the median?*

Bullet 1:

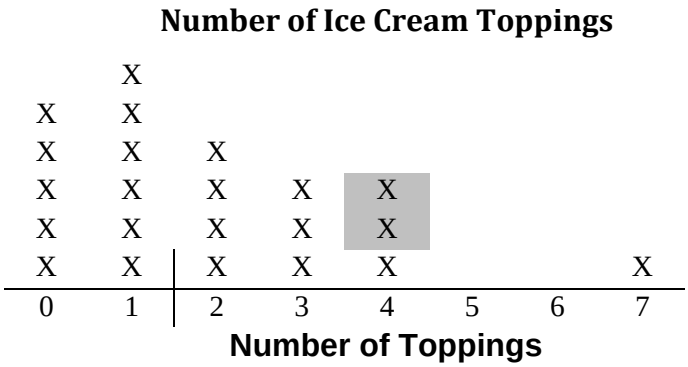
Number of Ice Cream Toppings



Number of Toppings

The median is the middle number in a set of data. There are 20 X's. I started at 0 and 7 and counted 10 X's from each side until my fingers met where I drew the line at the 1.

Bullet 2:



I added two X's above the 4 since two more people want 4 toppings on their ice cream. There are 22 X's. I started at 0 and 7 and counted 11 X's from each side until my fingers met where I drew the line between 1 and 2. The new median is 1.5.